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Cave millipeds of the United States. XI. *Opiona graeningi,* n. sp., a troglomorphic caseyid milliped from Siskiyou County, California, with comments on the genus *Opiona* Chamberlin 1951 (Diplopoda, Chordeumatida, Caseyidae)

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Abstract

The new species *Opiona graeningi* is described from caves in the Marble Mountain Wilderness Area, Klamath National Forest, Siskiyou Co., California, as the first troglomorphic species of *Opiona*, the first troglobiont from the globally important Klamath Siskiyou ecoregion, and possibly the first troglobiotic caseyid. Notes are provided on the composition of the genus *Opiona* and on the interpretation of the gonopods. *Opiona*, with 13 described species, may not be monophyletic.

Key words: troglobiont, Marble Mountain, Caseyidae, *Speoseya*, gonopods

Introduction

The milliped genus *Opiona* was established in 1951 by R. V. Chamberlin, with the type species *Opiona columbiana* Chamberlin 1951. The genus was revised by Gardner and Shelley (1989), and presently contains 13 species, distributed in two regions, in the south from Mendocino to Santa Cruz Cos., California, and in the north from southern Oregon to the Queen Charlotte Islands, British Columbia, and Wrangell Island, Alaska (Shelley *et al.* 2007). In addition to the species already described, I have seen at least six species that have not been named, excluding the subject of this paper.

Opiona graeningi occurs in the gap between the two areas of distribution of *Opiona* delimited by Gardner and Shelley (1989), as do some of the undescribed species referenced above, so it is likely that the genus is distributed continuously from Santa Cruz Co., California, to southern Alaska, and includes more, as yet undescribed, species.

Troglomorphic caseyids

It is a curious observation that while in the eastern United States, many members of the milliped family Cleidogonidae, in particular the genus *Pseudotremia*, have evolved troglomorphic features and are known exclusively from subterranean habitats (Shear 2008, 2011), the ecologically equivalent Caseyidae have not done so in the Pacific states. The relatively few troglomorphic chordeumatidan millipeds that have been described from California, Oregon and Washington belong to the transcontinental family Conotylidae (see Shear 1971, 1972, 1976, 2004)

Causey (1963) described two species of caseyid millipeds collected in caves in Calaveras and Mendocino Cos., California. One of them, *Speoseya grahami* Causey 1963, is small, eyeless and depigmented, and so was characterized by Causey as a troglobiont. *Speoseya grahami* has not been collected since the original description, and the species, the only one in its genus, was not restudied by Gardner and Shelley (1989). The second species described by Causey (1963) was *Opiona siliquae*, which she supposed was troglophilic, as it has no troglomorphic features. This species has likewise not been recollected. I have been fortunate in having received large collections of caseyid millipeds from the Pacific northwest, most of them obtained by William Leonard and Casey Richart, and have sorted through raw Berlese samples from the region in the Field Museum of Natural History in Chicago, courtesy

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